SCHAEFER

User Manual

Rainbow Button

RB 42
RD 42
RB 42 2M XI

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1 General description

1.1 RB 42

The Rainbow Button RB 42 is a non-contact button for installation behind glass, Perspex®, etc. It reacts to capacitive changes. Doing so, it independently adapts to changed ambient conditions.

The colours for quiescent and acknowledgement state can be freely set. Furthermore, the sensitivity and a number of other parameters can be set.
All settings can be carried out comfortably with the PC programme Rainbow-Configurator or with the DIP switches directly on the device.

The design of the visible touch surface is generally specified by the pressure on the glass surface, and the corresponding area is lit up by the button from the back.

In combination with the Power Saver PS 42, further functions are available. Thus, it is possible to reduce the brightness level of the RB 42 dependent on other parameters.

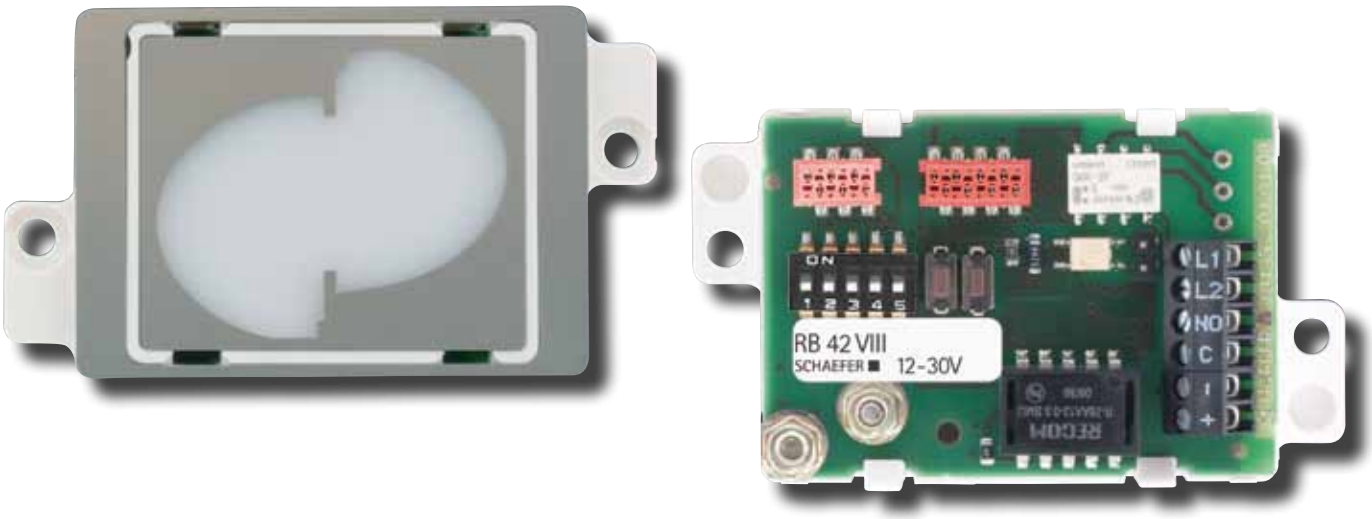
1.2 RD 42

The Rainbow Display RD 42 is identical in construction with the RB 42. The button function is off, however. Thus, the RD 42 serves as luminous display whose colour can be changed via the recall light input.
The colours for the deactivated and the acknowledged state are freely adjustable. There is also a reduction function available in combination with the PS 42.

1.3 RB 42 2M XI

The RB 42 2M XI has been designed especially for the function as an emergency call button. It has an additional potential-free alternating contact and a monitoring circuit.
The monitoring circuit automatically checks the function of the button at an interval of 24 hours. This ensures increased function safety of the button. For information regarding the precise function see section 4.3.

2 Illustration



3 Configuration

There are two configuration options:

- The RB 42 is configured by SCHAEFER according to customer specifications.
- You configure the RB 42 yourself. You make all settings without additional aids at the RB 42 and afterwards send these settings to a number of other buttons.
  Alternatively, you can also carry out the settings via the PC programme called „Rainbow-Configurator". For this, you will need a Windows PC, the Config Kit of SCHAEFER GmbH and the RB 42-Config-Adapter.

4 Installation and connection

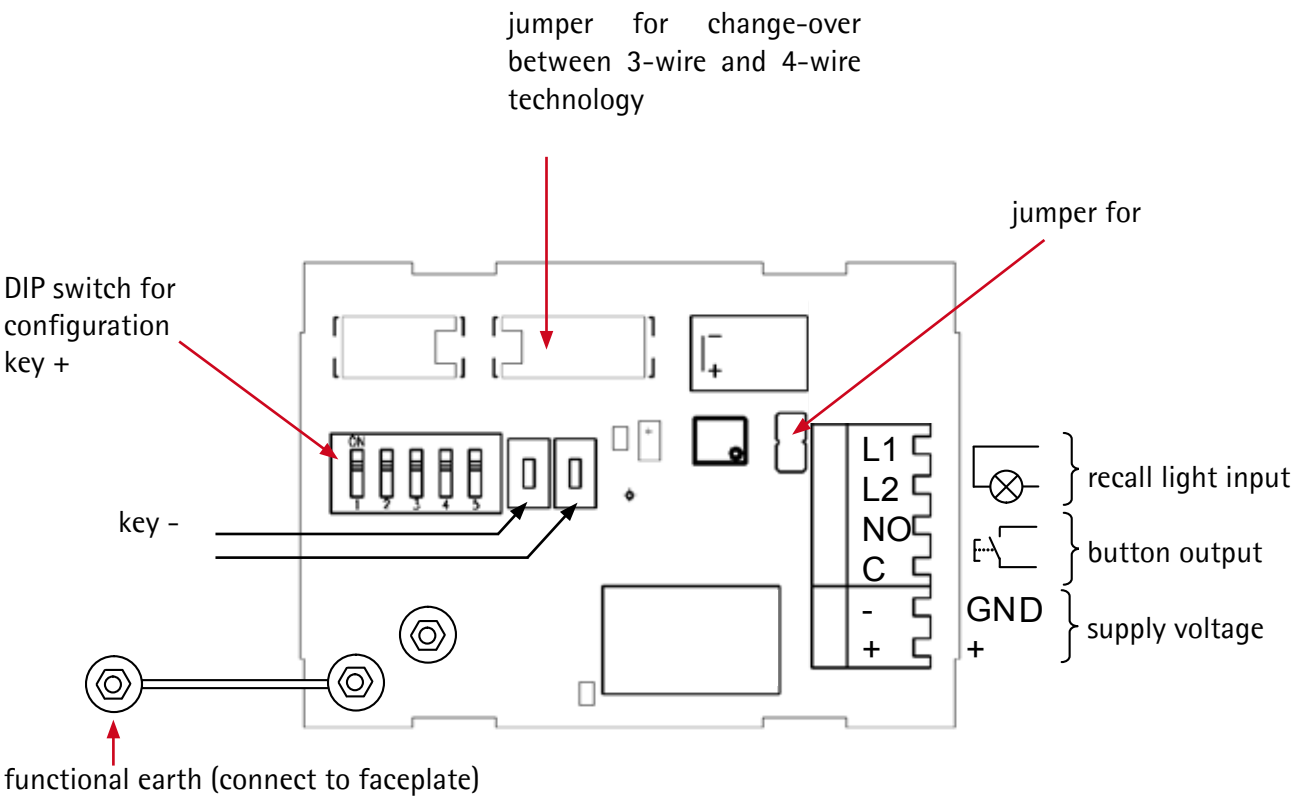
The button is meant for installation behind a closed glass surface. From the rear, a stainless steel plate having a rectangular cutout for the RB 42 is bonded. The button is fixed to the stainless steel plate by means of welding studs.
The functional earth of the button (green cable) must be connected with the stainless steel plate by means of a welding stud.
Upon installation it must be observed that the touch plates are flush and that there is no air space between the glass plate and the touchplates.

4.1 Change-over between 3-wire and 4-wire technology

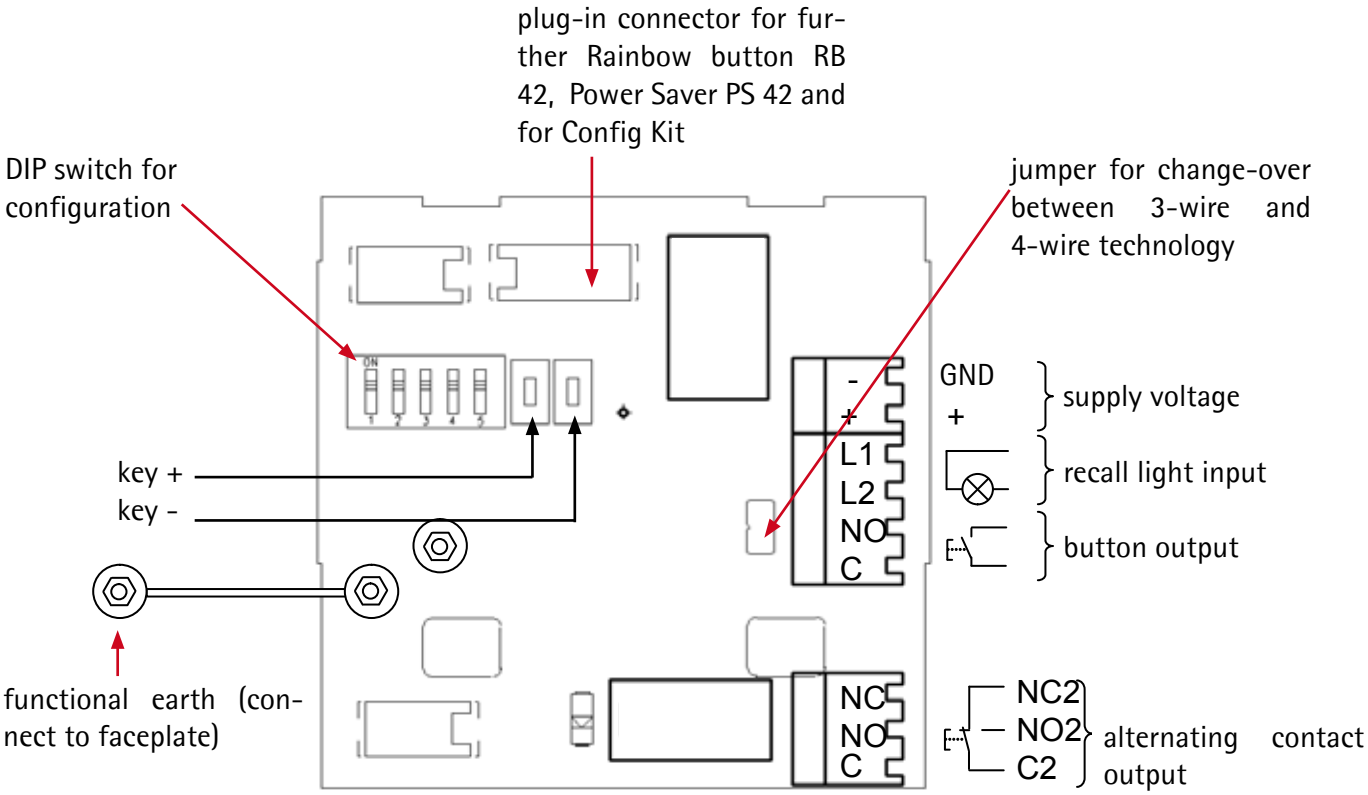
You can switch between 3-wire and 4-wire technology with a jumper.

	jumper open	4-wire technology
	jumper inserted	3-wire technology (NO and L1 are internally connected)

4.2 RB 42 and RD 42



4.3 RB 42 2M XI



The C2 – NC2 contacts are designed in such a manner that a short-circuit can be excluded with great probability (EN 81-1:1998 + AC:1999, Appendix H). Connect the emergency call device to these contacts. That way, a button defect, with great probability, will lead to an emergency call being triggered.

The C – NO contacts are designed in such a manner that no interference impulses occur. Connect other alarm devices here.

Impulse diagrams, see section 6.

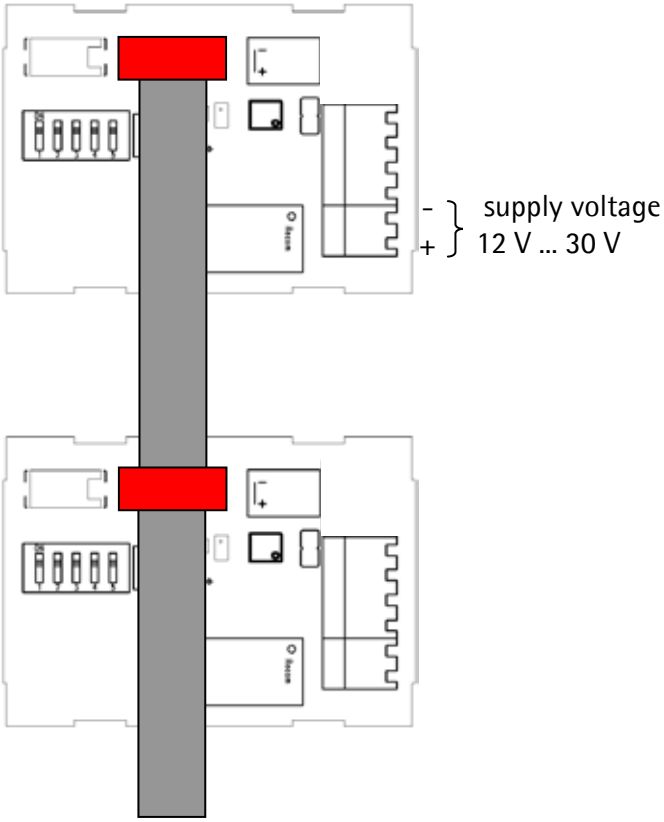
4.4 Connection Power Saver PS 42 and connection of several buttons

Connect the buttons and the possibly present PS 42 with a ribbon cable via the 8-pole Micro-Match connectors.

max. ribbon cable length: 2 m.

Do not lead the cable outside the fixture!

It suffices if you connect the supply voltage to one button only

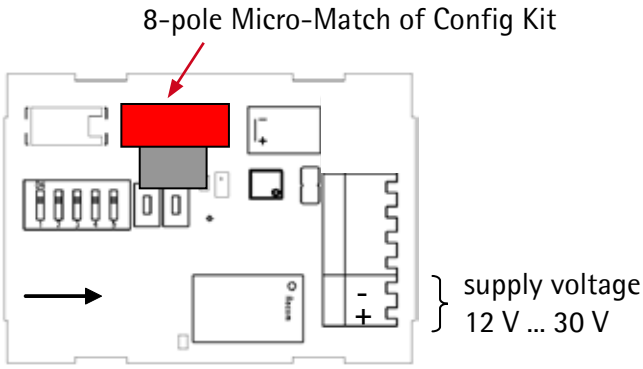


4.5 Connection Config Kit

The following information applies equally for RB 42, RD 42 and RB 42 2M XI

4.5.1 Individual button with supply voltage

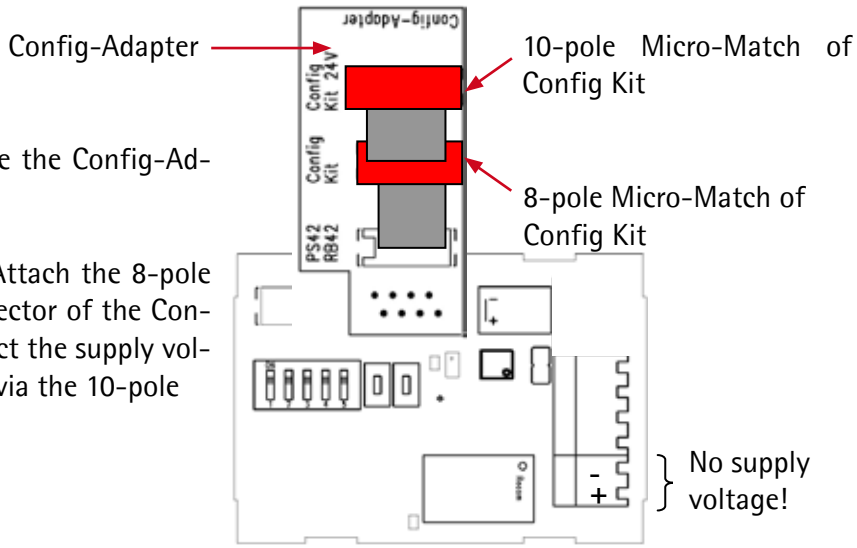
Connect the 8-pole Micro-Match to the RB 42 and connect the supply voltage.



4.5.2 Individual button without supply voltage

If no supply voltage is available, use the Config-Adapter.

Attach it to the RB 42 as shown. |Attach the 8-pole and the 10-pole Micro-Match connector of the Config Kit to the adapter. Do not connect the supply voltage. Power supply to the button is via the 10-pole Micro-Match.

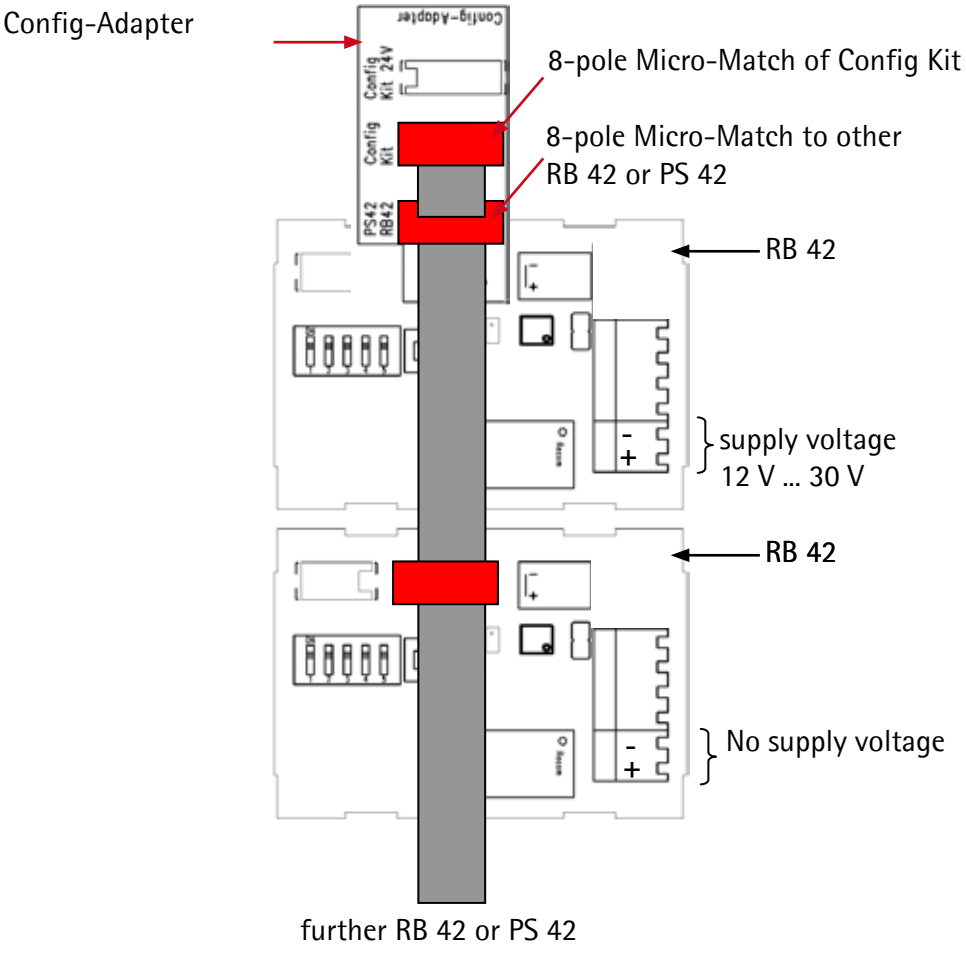


4.5.3 Several buttons

If you wish to set several RB 42 at once, use the Config Adapter.

Attach it to the RB 42 as shown. Attach the 8-pole Micro-Match connector of the Config Kit to the adapter. Connect the supply voltage to one of the buttons.

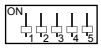
Careful!
Do not attach the 10-pole Micro-Match of the Config Kit to the adapter.


Config-Adapter
8-pole Micro-Match of Config Kit
8-pole Micro-Match to other RB 42 or PS 42
RB 42
supply voltage 12 V ... 30 V
RB 42
No supply voltage
further RB 42 or PS 42

5 Settings

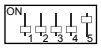
Directly at the RB 42, it is possible to use the keys and DIP switches to change all settings.
The DIP switch is used to select which value is to be adjusted (e. g. colour in off state). The minus key is used to decrease this value, the plus key to increase it. The current value is indicated by the luminous colour of the RB 42.
When resetting the DIP switches into home position, the altered values are stored in the RB 42 and are not lost if there is a power cut.

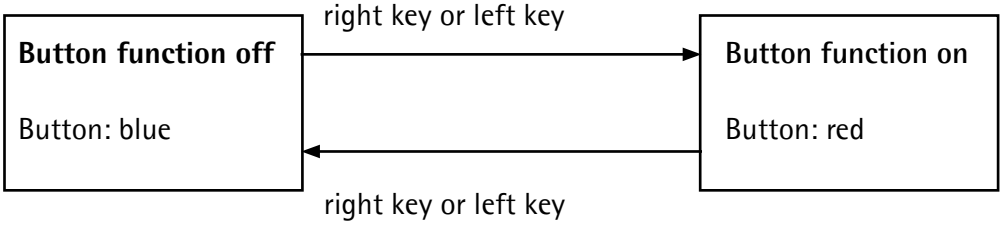
For normal operation, the DIP switches must all be OFF.



5.1 Button function on/off

The button function can be switched off. With function disabled, the RB 42 serves as luminous display RD 42.





The following settings apply for RB 42, RB 42 emergency call button and RD 42.

Note:
If you are using several buttons, connect these as outlined under 4.4. Alter these settings at one button to what you desire. Afterwards, send this configuration to all the other buttons.

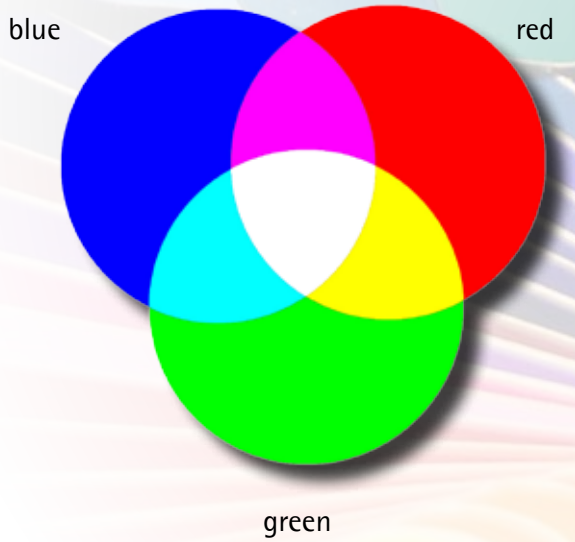
5.2 Setting colour and brightness

For the deactivated and for the activated (acknowledged) state, two separate colours can be set. The resulting colour and brightness arise from the mixture of red, green and blue light. With the following settings, the red, green and blue portions can be set separately for each state.
The plus key increases the saturation of the selected colour, the minus key reduces it. A permanently pressed key works like fast-repeat key pressing (repeat function).

The composite colour for the state concerned is always the one that is shown.

Example
To set red as the colour for the off state, the green portion must first be set to zero (5.2.2), as must the blue portion (5.2.3). Afterwards, adjust the red portion (5.2.1) to achieve the desired brightness level.

The following image shows the composition of the colours.
Colour circle:RGB colour model
(additive colour mixture)

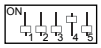


RGB portion of individual colours for maximum brightness

Resulting colour	Red portion	Green portion	Blue portion
red	255	0	0
orange	255	7	0
yellow	200	255	0
green	0	255	0
cyan	0	255	200
blue	0	0	255
magenta (violet)	0	127	255
white*	82	255	125

* White results at equal brightness levels of red, green and blue portions. Since the individual LED colours shine at different intensity, different values need to be set here.

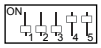
5.2.1 Brightness "red" in off state



Plus key: red saturation increases
Minus key: red saturation decreases

The button shows the colour in off state.

5.2.2 Brightness "green" in off state



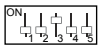
Plus key: green saturation increases
Minus key: green saturation decreases

The button shows the colour in off state.

Note: When green portion is very low, flickering may result. Remedy: Increase green portion or switch it off.

5.2.3 Brightness "blue" in off state

Plus key: blue saturation increases
Minus key: blue saturation decreases

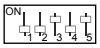


The button shows the colour in off state.

.

Note:
For more major colour adjustments, hold one key down for a longer time!

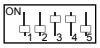
5.2.4 Brightness "red" in on state



Plus key: red proportion increases
Minus key: red proportion decreases

The button shows the colour in on state.

5.2.5 Brightness "green" in on state



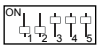
Plus key: green proportion increases
Minus key: green proportion decreases

The button shows the colour in on state.

Note: When green portion is very low, flickering may result. Remedy: Increase green portion or switch it off.

5.2.6 Brightness "blue" in on state

Plus key: blue proportion increases
Minus key: blue proportion decreases



The button shows the colour in on state.

5.3 Reduction

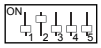
In combination with the Power Saver PS 42, the brightness of the RB 42 can be reduced.
The PS 42 supplies two independent output signals: motion detector and light sensor.

Example 1:
Brightness reduction when the elevator is not in use. In extreme cases, the buttons can be completely dark (see 5.3.1).

Example 2:
Glass elevator: Brightness reduction when the elevator is indoors. Brightness increase when outside light hits the elevator (see 5.3.2 and 5.3.3).

Setting of times and sensitivity level of the motion detector and light sensor is done at the Power Saver PS 42.

5.3.1 Reduction motion detector

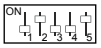


The brightness level of the lowered, switched-off state is set. This becomes active when the Power Saver is connected and the motion detector has not responded.

Plus key: brightness level increases
Minus key: brightness level decreases

The button shows the colour in lowered, switched-off state.

5.3.2 Reduction light sensor in off state

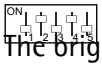


The brightness level of the lowered, switched-off state is set. This becomes active when the Power Saver is connected and the light sensor has not responded.

Plus key: brightness level increases
Minus key: brightness level decreases

The button shows the colour in lowered, switched-off state.

5.3.3 Reduction light sensor in on state

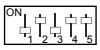


The brightness level of the lowered, switched-on state is set. This becomes active when the Power Saver is connected and the light sensor has not responded.

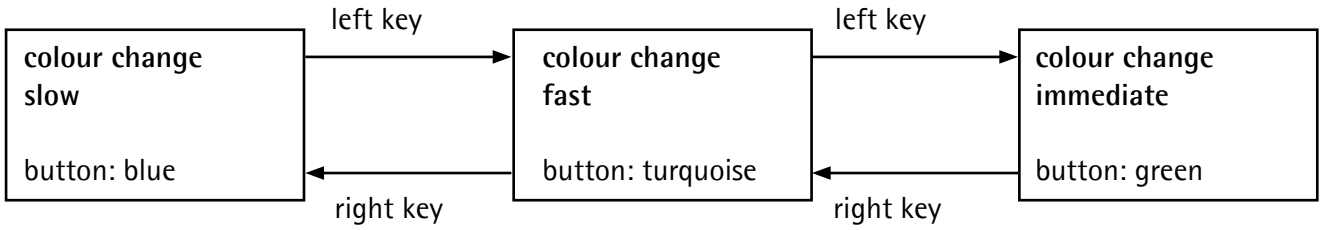
Plus key: brightness level increases
Minus key: brightness level decreases

The button shows the colour in lowered, switched-on state.

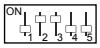
5.4 Colour change at activation



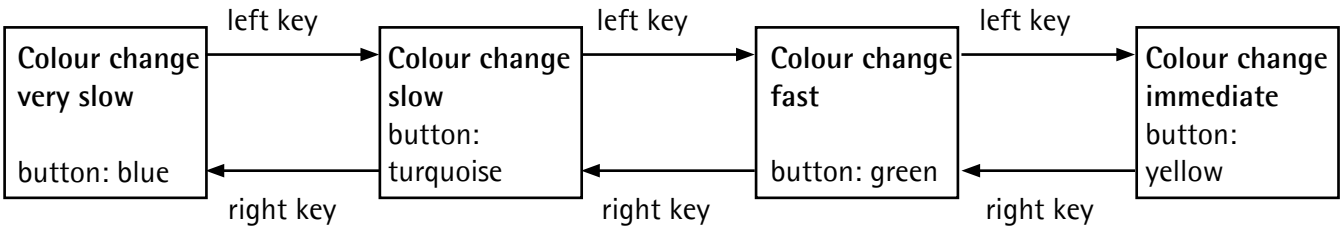
This sets the speed at which the colour change occurs when activating the buttons (shift from deactivated to the switched-on/acknowledged state).



5.5 Colour change at reduction

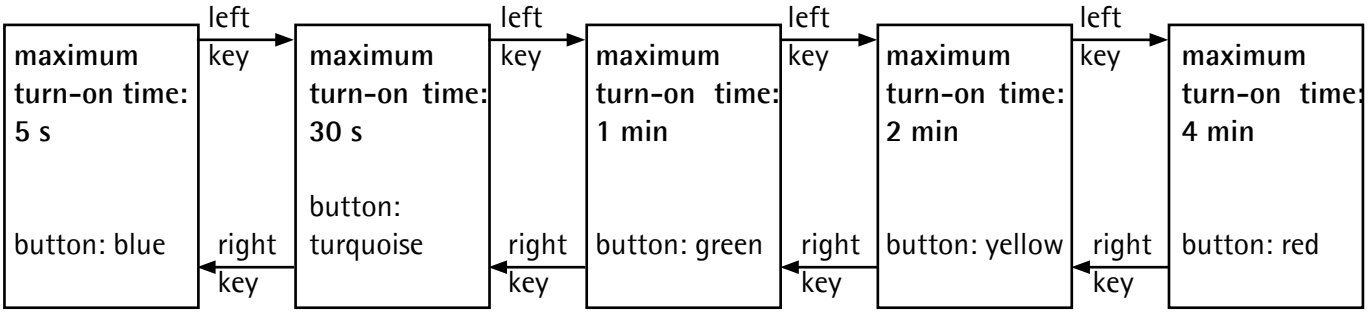


This sets the speed at which the colour change occurs during reduction (shift from normal to lowered state) and vice versa.



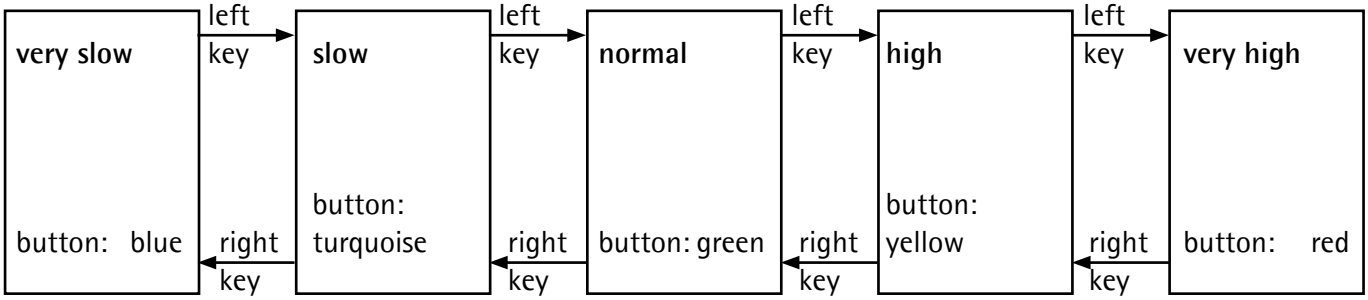
5.6 Max. turn-on time

This sets the maximum time a button can be in „on" state. After this time, it resets itself and recalibrates..

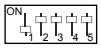


5.7 Sensitivity

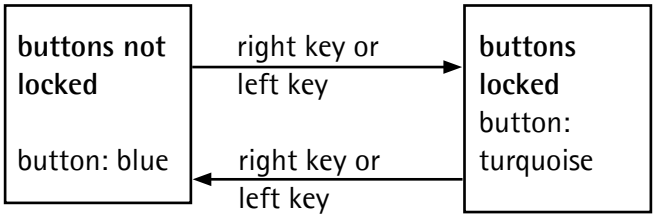
With this parameter, the sensitivity level of the button can be altered. With great glass thickness, the sensitivity level is also high.
Use this parameter to adapt the RB 42 to different installation situations.



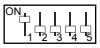
5.8 Locking several buttons



With this function, the triggering of a button can be prevented if another button is pressed.
Requirement: The buttons must be connected with each other as described under 4.4.



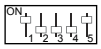
5.9 Sending the configuration



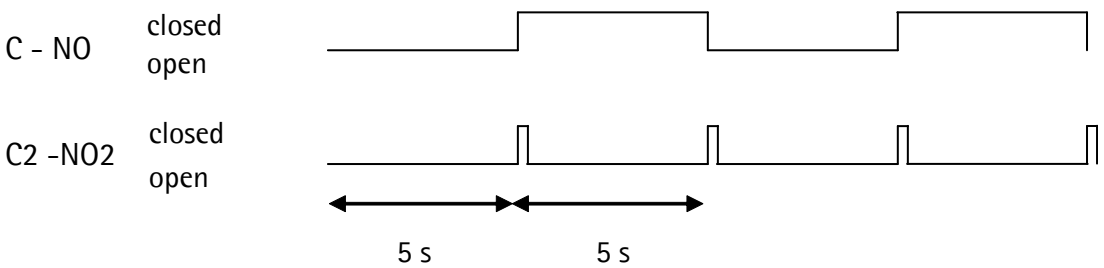
With this function, the current settings are sent to all connected buttons.
For this, connect the buttons with a ribbon cable as described under 4.4. The DIP switches of all receiving buttons must be on „normal". The Config Kit must not be connected.
Also use this function to transmit the settings of a present button on to a new one.

Left key: Activates the sending of the configuration.

5.10 Test mode



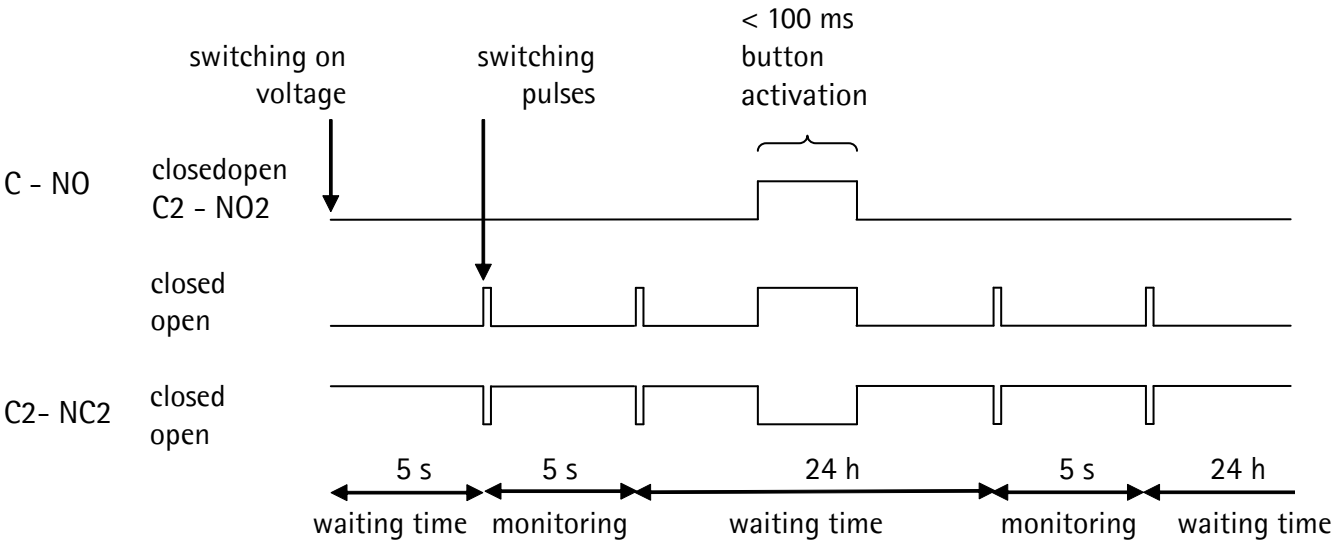
Only for RB 42 2M XI
This position moves the RB 42 2M X into test mode.
The check is switched on every 10 secs. for a duration of 5 secs.



6 RB 42 2M XI – additional function

The RB 42 2M XI has an additional monitoring circuit, which cyclically checks the function of the button. After activation, and at an interval of 24 hours, the monitoring circuit triggers the button automatically for a duration of 5 secs.

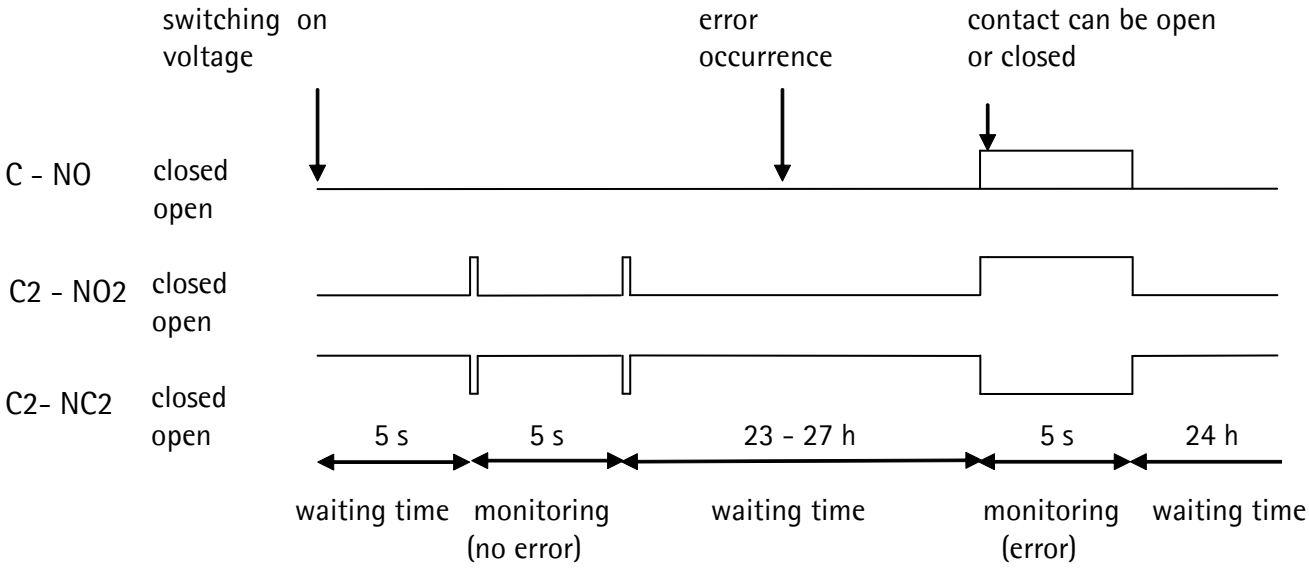
Faultless function
In absence of errors, C – NO and C2 – NO2 remain open during the monitoring time, and C2 – NC2 remain closed. At the C2 – NO2 and C2 – NC2 contacts, momentary switching pulses may occur.



Faulty button – response of the monitoring function

If there is a defect in the button, it is identified during the next monitoring and reported by C2 – NO2 closing and C2 – NC2 opening.

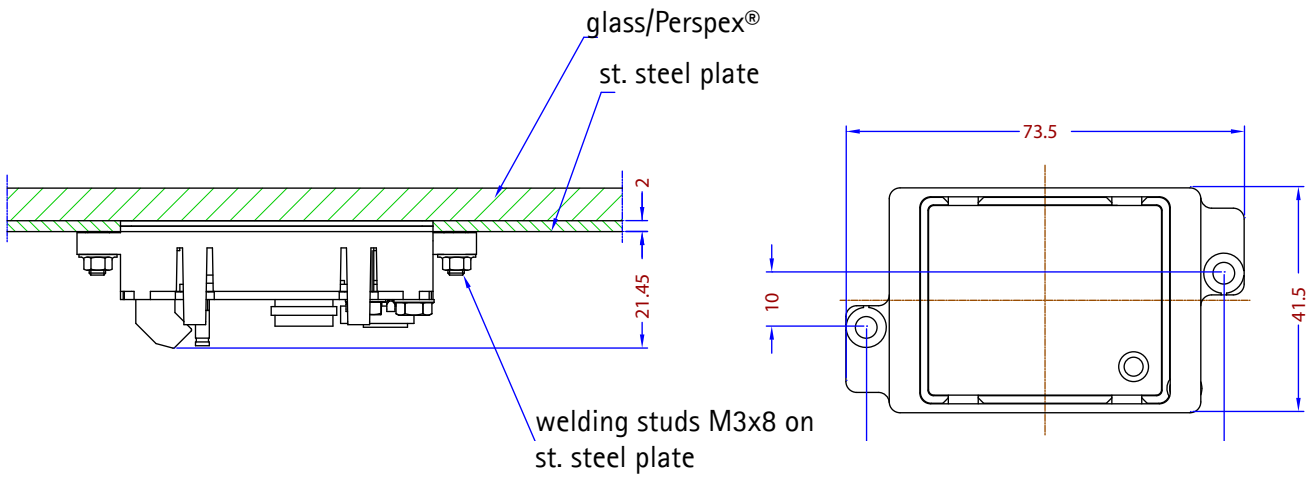
The C – NO contacts are not meant for reporting an error. Depending on the type of error, they can be closed or open during monitoring.



7 Characteristics

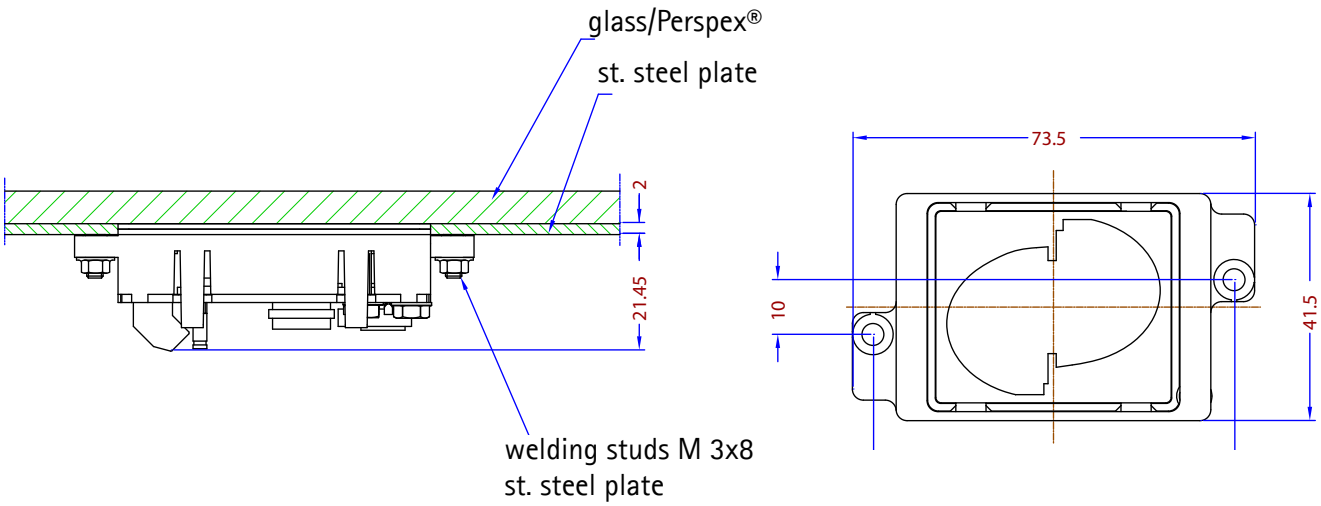
7.1 RB 42

Supply voltage	12 V ... 30 V DC, smoothed
Quiescent current (typ.)	15 mA at 12 V
Operating current (typ.)	LEDs off, relay on: 40 mA at 12 V LED blue on, relay off: 60 mA at 12 V, 30 mA at 30 V all LEDs on, relay on: 180 mA at 12 V, 80 mA at 30 V
Temperature range	-20 °C ... +65 °C
Connection technology	terminal, 0.1 mm² ... 1 mm²
Recall light	12 V ... 30 V AC/DC
Outputs	1 potential-free NC switching voltage = max. 50 V AC / 60 V DC switching current = max. 1 A ohmic load switching capacity = max. 37 VA AC / 30 W DC
Dimensions	(L x W x D) 74 mm x 41.5 mm x 25 mm pitch 42 mm
Fixing	2 welding studs



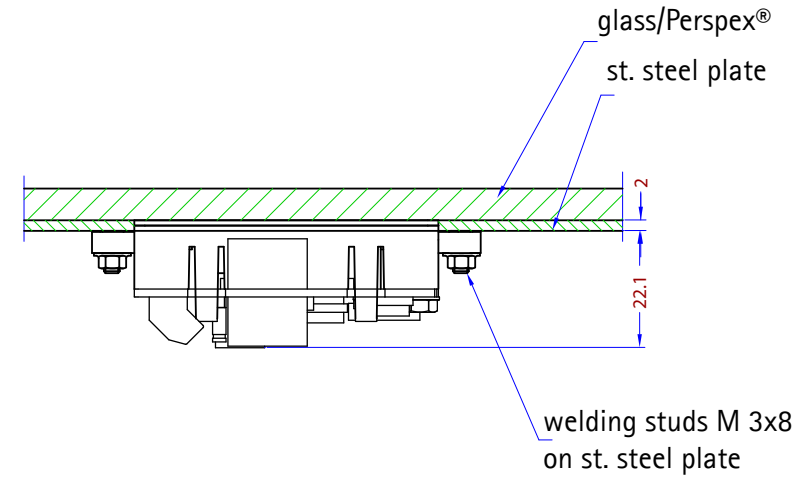
7.2 RD 42

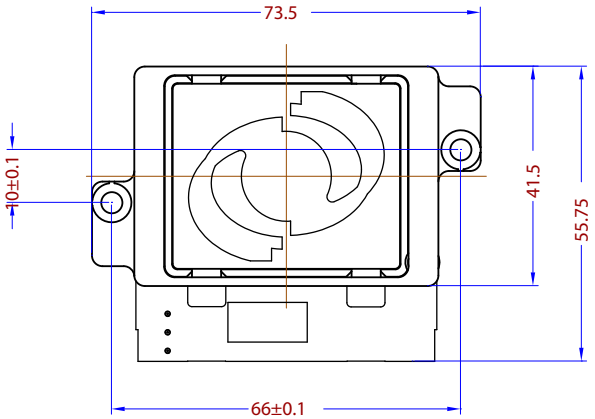
Supply voltage	12 V ... 30 V DC, smoothed
Quiescent current (typ.)	15 mA at 12 V
Operating current (typ.)	LEDs off: 10 mA LED blue on: 50 mA at 12 V, 25 mA at 30 V all LEDs on: 160 mA at 12 V, 70 mA at 30 V
Temperature range	-20 °C ... +65 °C
Connection technology	terminal, 0.1 mm² ... 1 mm²
Recall light	12 V ... 30 V AC/DC
Dimensions	(L x W x D) 74 mm x 41.5 mm x 25 mm pitch 42 mm
Fixing	2 welding studs



7.3 RB 42 2M XI

Supply voltage	12 V ... 30 V DC, smoothed
Quiescent current (typ.)	30 mA at 12 V, 16 mA at 30 V
Operating current (typ.)	LED blue on: 70 mA at 12 V, 30 mA at 30 V all LEDs on, output on 180 mA at 12 V, 80 mA at 30 V
Temperature range	-20 °C ... +65 °C
Connecting technology	terminal, 0.1 mm² ... 1 mm²
Inputs	1 input 12 V ... 30 V AC/DC
Outputs	1 potential-free NC switching voltage = max. 50 V AC / 60 V DC switching current = max. 1 A ohmic load switching capacity = max. 37 VA AC / 30 W DC 1 potential-free alternating contact switching voltage = max. 30 V AC / 30 V DC switching current = max. 2 A ohmic load switching capacity = max. 62.5 VA AC / 60 W DC During the automatic check, switching pulses of up to 100 msecs. can occur at this contact.
Dimensions	(L x W x D) 74 mm x 57 mm x 25 mm
Fixing	2 welding studs


glass/Perspex®
st. steel plate
2
22.1
welding studs M 3x8
on st. steel plate


73.5
10±0.1
41.5
55.75
66±0.1